

CLAIMS

We claim:

- 5           1.     A data-storage card comprising:  
  
                  at least an optical data track for storing data accessible with  
                  an optical data accessing means wherein said optical data  
                  track is supported on an optical memory strip (OMS) as a  
10            cutoff piece attached to said data-storage card.
2.     The data-storage card of claim 1 further comprising:  
  
                  at least a magnetic data track for storing data accessible with  
                  a magnetic data accessing means.  
15            3.     The data-storage card of claim 1 further comprising:  
  
                  a semiconductor chip for storing data accessible with a  
                  semiconductor data accessing means.  
20            4.     The data-storage card of claim 1 wherein:  
  
                  said optical data track further having a plurality of circular  
                  arc segments.  
25            5.     The data-storage card of claim 1 wherein:  
  
                  said optical data track further having a plurality of arc  
                  segments formed as spiral segments having a fixed center  
30            rotating with continuously varying radius.

- 5                   6.     The data-storage card of claim 1 wherein:
- said optical data track further having a plurality of arc  
                      segments formed as spiral segments having a moving center  
                      rotating with continuously varying radius.
- 10                  7.     The data-storage card of claim 1 wherein:
- said optical data track further having a plurality of arc  
                      segments formed as circle segments having a fixed center of  
                      concentric circles.
- 15                  8.     The data-storage card of claim 1 wherein:
- said optical data track further having a plurality of arc  
                      segments formed as circle segments having a moving center  
                      rotating with constant radius.
- 20                  9.     The data-storage card of claim 1 wherein:
- said optical data track further having at least two arc  
                      segments of different lengths.
- 25                  10.    The data-storage card of claim 1 wherein:
- said optical data track further having a circular arc segment.
- 30                  11.    The data-storage card of claim 1 wherein:
- said optical data track further having a spiral arc segment.
- 35                  12.    The data-storage card of claim 1 wherein:
- said optical data track further includes a linear data-track  
                      segment.

13. The data-storage card of claim 1 wherein:
- 5           said OMS further including a recording layer for disposing  
said data track wherein said recording layer having an area  
smaller than said OMS as said cutoff piece.
14. The data-storage card of claim 1 wherein:
- 10           said OMS further having a protective layer with a trench for  
disposing a recording layer therein for containing said  
optical data track.
15. The data-storage card of claim 1 wherein:
- 15           said OMS further having a protective layer with a trench for  
disposing a recording layer therein for containing said  
optical data track, and said OMS further having a reflective  
layer disposed below said recording layer in said trench.
- 20           16. The data-storage card of claim 15 wherein:
- said OMS further having a dye layer disposing in said trench  
below said recording layer.
- 25           17. The data-storage card of claim 15 wherein:
- said OMS further having a dielectric layer disposing in said  
trench.
- 30           18. The data-storage card of claim 15 wherein:
- said OMS further having a metal phase-change (PC) layer  
disposing in said trench.

19. The data-storage card of claim 1 wherein:

5       said OMS further having a protective layer with a trench for disposing a recording layer therein for containing said optical data track; and

      said OMS further includes a focusing layer covering said protective layer and sealing said recording layer in said trench.

20. The data-storage card of claim 15 wherein:

15       said OMS further includes a focusing layer covering said protective layer and sealing said recording layer and said reflective layer in said trench.

21. The data-storage card of claim 16 wherein:

20       said OMS further includes a focusing layer covering said protective layer and sealing said recording layer, said dye layer and said reflective layer in said trench.

22. The data-storage card of claim 17 wherein:

25       said OMS further includes a focusing layer covering said protective layer and sealing said recording layer, said reflective layer and said dielectric layer in said trench.

23. The data-storage card of claim 18 wherein:

30       said OMS further includes a focusing layer covering said protective layer and sealing said recording layer, said reflective layer and said metal phase-change (PC) layer in said trench.

24. The data-storage card of claim 1 wherein:

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said OMS further having a protective layer with a trench for disposing a recording layer therein for containing said optical data track, and said OMS further having a heat activate bonding layer disposed below said protective layer.

25. The data-storage card of claim 1 wherein:

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said OMS further having a protective layer with a trench for disposing a recording layer therein for containing said optical data track; and

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said OMS further having a heat activate bonding layer disposed below said protective layer for bonding and attaching to said data storage card wherein said bonding of said OMS as said cutoff piece to said data storage card is between heat-activated bonding layer activated with a heat applying to said OMS on an area not overlapping with said recording layer.

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26. The data-storage card of claim 1 further comprising:

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an OMS placement area having a lower surface profile having an area slightly larger than said OMS for placing and attaching said OMS as a cutoff piece to said data-storage card.

27. The data-storage card of claim 1 further comprising:

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an OMS placement area having a lower surface profile having an area slightly larger than said OMS for placing and attaching said OMS as a cutoff piece to said data-storage card whereby a top surface of said OMS is substantially at a same height as a top surface of said data-storage card.

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28. The data-storage card of claim 26 wherein:

5 said OMS further having a bonding layer disposed as a bottom layer of said OMS for bonding to said OMS placement area to securely attach said OMS as a cutoff piece to said data-storage card.

29. The data-storage card of claim 28 wherein:

10 said bonding layer disposed as a bottom layer of said OMS is a heat-activated bonding layer for bonding to said OMS placement area by applying a heat to said OMS on an area not overlapping to a recording layer disposed on said OMS whereby said recording layer is not applied with said heat.

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30. An optical memory strip constituting a cutoff piece comprising:  
at least an optical data track useful for storing data accessible with an optical data accessing means.

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31. The OMS of claim 30 wherein:

said optical data track further having a plurality of circular arc segments.

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32. The OMS of claim 30 wherein:

said optical data track further having a plurality of arc segments formed as spiral segments having a fixed center rotating with continuously varying radius.

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33. The OMS of claim 30 wherein:

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said optical data track further having a plurality of arc segments formed as spiral segments having a moving center rotating with continuously varying radius.

34. The OMS of claim 30 wherein:

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said optical data track further having at least two arc segments of different lengths.

35. The OMS of claim 30 wherein:

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said optical data track further having a circular arc segment.

36. The OMS of claim 30 wherein:

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said optical data track further having a spiral arc segment.

37. The OMS of claim 30 wherein:

said optical data track further includes a linear data-track segment.

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38. The OMS of claim 30 further comprising:

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a recording layer for disposing said data track wherein said recording layer having an area smaller than said OMS as said cutoff piece.

39. The OMS of claim 30 further comprising:

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a protective layer with a trench for disposing a recording layer therein for containing said optical data track.

40. The OMS of claim 30 further comprising:
- 5 a protective layer with a trench for disposing a recording layer therein for containing said optical data track, and said OMS further having a reflective layer disposed below said recording layer in said trench.
41. The OMS of claim 40 further comprising:
- 10 a dye layer disposing in said trench below said recording layer.
42. The OMS of claim 40 further comprising:
- 15 a dielectric layer disposing in said trench.
43. The OMS of claim 40 further comprising:
- 20 a metal phase-change (PC) layer disposing in said trench.
44. The OMS of claim 30 further comprising:
- 25 a protective layer with a trench for disposing a recording layer therein for containing said optical data track; and
- a focusing layer covering said protective layer and sealing said recording layer in said trench.
45. The OMS of claim 40 further comprising:
- 30 a focusing layer covering said protective layer and sealing said recording layer and said reflective layer in said trench.



- 5                   46.     The OMS of claim 41 further comprising:  
  
                    a focusing layer covering said protective layer and sealing  
                    said recording layer, said dye layer and said reflective layer  
                    in said trench.
- 10                  47.     The OMS of claim 40 further comprising:  
  
                    a focusing layer covering said protective layer and sealing  
                    said recording layer, said reflective layer and said dielectric  
                    layer in said trench.
- 15                  48.     The OMS of claim 43 further comprising:  
  
                    a focusing layer covering said protective layer and sealing  
                    said recording layer, said reflective layer and said metal  
                    phase-change (PC) layer in said trench.
- 20                  49.     The OMS of claim 30 further comprising:  
  
                    a heat activate bonding layer disposed below said protective  
                    layer.
- 25                  50.     The OMS of claim 30 further comprising:  
  
                    a protective layer with a trench for disposing a recording  
                    layer therein for containing said optical data track; and  
  
                    a layer disposed below said protective layer for bonding and  
30                   attaching to a data storage card as a cutoff piece.

51. The OMS of claim 50 wherein:

5       said bonding layer is a heat-activated layer wherein said  
      OMS as said cutoff piece is bonded to said data storage card  
      with a heat applying to said OMS on an area not  
      overlapping with said recording layer.

52. The OMS of claim 30 wherein:

10       said optical data track further having a plurality of arc  
      segments formed as circle segments having a fixed center of  
      concentric circles.

53. The OMS of claim 30 wherein:

15       said optical data track further having a plurality of arc  
      segments formed as circle segments having a moving center  
      rotating with constant radius.

20       54. A method to form an optical memory strip (OMS) useful for  
      implementing as a cutoff piece comprising:

25       forming said OMS on a disc with at least an optical data  
      track for storing data accessible with an optical data  
      accessing means.

55. The method of claim 54 wherein:

30       said step of forming said optical data track further including  
      a step of forming a plurality of circular arc segments.

56. The method of claim 54 wherein:

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said step of forming said optical data track further including  
a step of forming a plurality of arc segments formed as spiral  
segments having a fixed center rotating with continuously  
varying radius.

57. The method of claim 54 wherein:

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said step of forming said optical data track further including  
a step of forming a plurality of arc segments formed as spiral  
segments having a moving center rotating with continuously  
varying radius.

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58. The method of claim 54 wherein:

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said step of forming said optical data track further including  
a step of forming at least two arc segments of different  
lengths.

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59. The method of claim 54 wherein:

said step of forming said optical data track further including  
a step of forming a circular arc segment.

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60. The method of claim 54 wherein:

said step of forming said optical data track further including  
a step of forming a spiral arc segment.

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61. The method of claim 54 wherein:

said step of forming said optical data track further including  
a step of forming a linear data-track segment.

62. The method of claim 54 wherein:

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said step of forming said optical data track further including  
a step of forming a recording layer having an area smaller  
than said OMS for disposing said data track.

63. The method of claim 62 wherein:

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said step of forming said optical data track further including  
a step of forming protective layer with a trench for disposing  
said recording layer therein for containing said optical data  
track.

64. The method of claim 62 wherein:

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said step of forming said optical data track further including  
a step of forming protective layer with a trench for disposing  
said recording layer therein for containing said optical data  
track and disposing a reflective layer below said recording  
layer in said trench.

65. The method of claim 62 wherein:

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said step of forming said optical data track further including  
a step of forming protective layer with a trench for disposing  
said recording layer therein for containing said optical data  
track and disposing a dye layer in said trench below said  
recording layer.

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66. The method of claim 63 further comprising:

disposing a dielectric layer in said trench.

67. The method of claim 63 further comprising:  
disposing a metal phase-change (PC) layer in said trench.
- 5 68. The method of claim 62 wherein:  
said step of forming said optical data track further including  
a step of forming protective layer with a trench for disposing  
said recording layer therein for containing said optical data  
10 track; and  
the method further includes a step of disposing a focusing  
layer for covering said protective layer and sealing said  
recording layer in said trench.
- 15 69. The method of claim 63 further comprising:  
disposing a focusing layer covering said protective layer and  
sealing said recording layer and said reflective layer in said  
20 trench.
70. The method of claim 64 further comprising:  
disposing a focusing layer covering said protective layer and  
25 sealing said recording layer, said dye layer and said  
reflective layer in said trench.

- 5                   71.     The method of claim 65 further comprising:  
  
                      disposing a focusing layer covering said protective layer and  
                      sealing said recording layer, said reflective layer and said  
                      dielectric layer in said trench.
- 10                  72.     The method of claim 66 further comprising:  
  
                      disposing a focusing layer covering said protective layer and  
                      sealing said recording layer, said reflective layer and said  
                      metal phase-change(PC) layer in said trench.
- 15                  73.     The method of claim 54 further comprising:  
  
                      disposing a heat activate bonding layer below said  
                      protective layer.
- 20                  74.     The method of claim 54 further comprising:  
  
                      disposing a protective layer with a trench for disposing a  
                      recording layer therein for containing said optical data track;  
  
                      disposing a bonding layer below said protective layer; and  
  
25                   cutting off said OMS from said disc and bonding and  
                      attaching said OMS to a data storage card as a cutoff piece.
- 30                  75.     The method of claim 74 wherein:  
  
                      said step of disposing said bonding layer is a step of  
                      disposing a heat-activated bonding layer.

76. The method of claim 75 wherein:

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said step of bonding and attaching said OMS to said data storage card is a step of applying a heat to said OMS on an area not overlapping with a recording layer for containing said data track.

77. The method of claim 54 wherein:

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said step of forming said optical data track further including a step of forming a plurality of arc segments formed as circle segments having a fixed center of concentric circles.

78. The method of claim 54 wherein:

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said step of forming said optical data track further including a step of forming plurality of arc segments formed as circle segments having a moving center rotating with constant radius.

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